

What is claimed is:

1. A system for actuating an indicator in response to a depth change in a liquid that is confined to a container, comprising:

a housing;

5 a flexible coupling having a first end and a second end, the first end being connected to the housing;

a lower assembly connected to the second end of the flexible coupling<

the lower assembly including a float constrained to vertical movement in response to changes in liquid depth in the container and an actuator arranged to move in response to vertical movement of the float, the flexible coupling being arranged to maintain the actuator in a vertical orientation in the liquid when the actuator and the housing are out of vertical alignment;

10 a coupler mechanism arranged to transfer movement of the actuator to the indicator.

2. The system of claim 1, further comprising:

a pair of parallel rods connected to the housing and arranged to be inserted into the liquid;

the float being slidably mounted to the rods such that the float is constrained to linear movement lengthwise along the rods.

20 3. The system of claim 2 wherein the float includes a first passage and a second passage extending therethrough and arranged in corresponding

relationship to the pair of rods such that a first rod extends through the first passage and a second rod extends through the second passage, the passages and rods being arranged to constrain the float to linear movement along the rods.

4. The system of claim 2 wherein the flexible coupling comprises a
5 flexible shaft having a variable shaft length compensator

5. The system of claim 2 further comprising a rod connected between the flexible coupling and the coupler mechanism.

6. The system of claim 3, further comprising a third passage extending through the float, the actuator being arranged to extend through the third
10 passage, the actuator and the float being arranged so that linear movement of the float along the rods causes rotational movement of the actuator.

7. The system of claim 6 wherein the third passage has a rectangular horizontal cross section and the actuator is formed as an elongate rod having a rectangular horizontal cross section, the elongate rod being formed as a helix that
15 rotates about its longitudinal axis as the float moves vertically along the rods.

8. The system of claim 4 wherein the coupler mechanism includes a magnetic coupler arranged to couple rotational movement of the actuator to the indicator.

9. The system of claim 4 wherein the coupler mechanism comprises:
20 a first rod connected to the actuator;
a first disk connected to the first rod;
a first pair of magnets mounted in the first disk;

a second rod connected to the indicator;

a second disk connected to the second rod

a second pair of magnets mounted in the second disk, the first and second

pair of magnets being arranged to be in facing relationship so that

5 poles of opposite polarity are in longitudinal alignment.

10. The system of claim 9 wherein the first disk is mounted inside the housing and the second disk is mounted inside the indicator assembly with the indicator assembly being arranged to be removable from the housing while the container remains sealed by the housing mounted in the container opening.

10 11. The system of claim 10 wherein the housing includes a vent passage into the container and the indicator assembly includes apparatus for opening the vent passage when the indicator assembly is mounted on the housing.

12. The system of claim 1 wherein the coupler mechanism includes a magnetic coupler arranged to couple rotational movement of the actuator to the
15 indicator.

13. The system of claim 1 wherein the float and the actuator are arranged such that vertical movement of the float produces rotational movement of the actuator.

14. A system for actuating an indicator assembly in response to a
20 depth change in a liquid that is confined to a container having at least one opening therein for transferring liquid material into and out of the container, comprising:

a housing mounted in the container opening;

a float constrained to vertical movement relative to the housing in

response to changes in liquid depth in the container;

actuator means connected to the housing and arranged to move in response

to vertical movement of the float;

5 coupler means arranged to transfer movement of the actuator means to the
indicator assembly.

15. The system of claim 1 wherein the housing, the indicator, an insert
mounted between the indicator and the housing are free to rotate about an axis
centered on the housing as the lower assembly seeks the local vertical.